Goal 2XL Herbicide Research Project on Hybrid Poplar at the Conservation Learning Centre, Prince Albert

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Abstract

Effective weed control is essential in establishing hybrid poplar grown in afforestation systems in Saskatchewan. Few registered herbicides are currently available for use in hybrid poplar crops, although there are several registered for use in shelterbelts. Goal 2XL is a herbicide registered for hybrid poplar crop use in the United States. The Poplar Council of Canada initiated a research project to gather data necessary for application for herbicide Minor Use Registration of Goal 2XL in Canada. The project was carried in four locations in Canada; two projects in Ontario, one in Saskatchewan and one in Alberta.

The use registrations for Goal 2XL in the United States are for rates of 0.5 and 1.0 kg ai/ha. The decision was to use these rates in the project and to add 2.0 and 4.0 kg ai/ha. rates. The four treatment rates were used alongside a weedy check and a weed free check as controls. These six randomized treatments were replicated in triplicate with two poplar clones – Walker and Assinaboine.

Each plot sprayed with Goal 2XL consisted of ten Walker and ten Assiniboine clones sprayed pre-planting and ten Walker and ten Assiniboine clones sprayed post- planting.

All Goal 2XL treatment rates were sprayed on June 6, 2005, using a backpack CO_2 pressure regulated sprayer. The treatments were assessed throughout the growing season for weed control and crop tolerance. The 2.0 and 4.0 kg ai/ha rates provided season long weed control. The 1.0 kg ai/ha rate had 31% weed cover after 99 days and the 0.5 kg ai/ha rate provided satisfactory weed control for only 45 days. No significant loss of growth or damage to trees occurred from the herbicide treatments, even at the 4.0 kg ai/ha rate.

The weed free controls were maintained by bagging the trees and treating the plots with Roundup in mid-June, mid-July, and mid-September at a 3L/ha rate.

Introduction

Hybrid poplar tree farming offers a new opportunity for Saskatchewan farmers. The existing clones respond well to good soil conditions and a high level of management. Effective weed control would consist of keeping weed ground cover at below 10% (Van Oosten, 1991). This is essential if the crop is to express genetic potential and produce a marketable crop in 15-25 years, depending on available moisture.

No pre-emergent and few post-emergent herbicides are registered for use in hybrid poplar crops in Canada. Herbicide use for weed control is a necessary tool that farmers need if they are to grow large acreages of hybrid poplar. Research at the Meadow Lake Hybrid Poplar Research Site has shown that trees where no weed control was applied were approximately 1 metre (m) tall at two years of age, whereas trees that had good weed control measures were approximately 2.5 m at two years (Van Rees et al., 2004).

Table l . Average Percent Ground Cover of Treatments for the 2005 Goal 2XL Research Project at the Conservation Learning Centre, Prince Albert, Sask.

	Average % ground cover			
Treatment	**After 37 days**	**After 42 days**	**After 65 days**	**After 99 days**
Weedy check	56	59	84	74
0.5 kg a.i./ha	6	7	30	42
1.0 kg a.i./ha	2	2	20	31
2.0 kg a.i./ha	1	1	6	8
4.0 kg a.i./ha	0	0	2	2

Summary

Based on one year's results Goal 2XL provided year-long weed control at the 2.0 and 4.0 kg a.i./ha. rates. The standard used for year long weed control was less than 10% ground cover after 99 days (Van Oosten, 1991). The plan is to leave the trial in the ground in 2006 to assess the carryover effect on weed control in year 2. The impact of good weed control will have beneficial effects in year 2. The degree of benefit will influence weed control costs and be important in farmers decision making on using Goal 2XL for weed control in hybrid poplar.

Citations

Van Rees, Ken, et al., 2004. Poplar Farming Field Day, August 26. Meadow Lake SK.
Van Oosten, Cees, et al., McMillan Bloedel, 1991